

# Early Alcohol Initiation and Subsequent Sexual and Alcohol Risk Behaviors Among Urban Youths

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National studies have documented lower prevalences of alcohol initiation and use among African American than among White adolescents.<sup>1,2</sup> Recent trends in some cities, however, raise concerns about the drinking behaviors of urban, predominately minority, adolescents. In 1997, for example, 31.1% of adolescents nationally and 30.5% of adolescents in New York City, NY, reported drinking before the age of 13 years; by 2001, these figures decreased to 29.1% nationwide but increased to 34.7% in New York City, where 39.3% of African American adolescents reported early alcohol use.<sup>3</sup> Early drinking is by itself cause for action, given its association with lifetime alcohol abuse and dependence.<sup>4-6</sup> It may be particularly consequential for adolescents who live in communities where substantial proportions of youths initiate sexual intercourse before high school and where the chance of exposure to HIV and other sexually transmitted infections is elevated.<sup>7-11</sup>

Research on adolescent risk behaviors documents the co-occurrence of alcohol use, sexual risk taking, and other problem behaviors.<sup>12,13</sup> Youths who drink, for example, are more likely to report multiple sexual partners and inconsistent condom use.<sup>14-16</sup> Early drinking also predicts later risk taking. Following an ethnically diverse sample from early adolescence to young adulthood, Guo et al.<sup>17</sup> found a connection between early patterns of use (e.g., binge drinking) and subsequent sexual risks. Ellickson et al.<sup>18</sup> also reported links between early drinking and problem behaviors, including pregnancy and parenthood by 12th grade.<sup>18</sup> Early drinking may shape subsequent functioning through multiple pathways, for example, by affecting judgment, school performance, peer selection, and exposure to environments that reward risk taking.<sup>12,13,19,20</sup> Although other substances (e.g., marijuana, cocaine) have been associated with sexual risk taking, drinking

**Objectives.** We examined relations between early alcohol use and subsequent alcohol and sexual risk behaviors among urban adolescents.

**Methods.** A total of 1034 African American and Hispanic youths completed surveys assessing alcohol and sexual behaviors at 7th and 10th grade. After we controlled for early sexual initiation, we examined relations between early drinking and subsequent alcohol and sexual behaviors.

**Results.** Early drinking was associated with alcohol and sexual risks through mid-adolescence. Early drinkers were more likely to report subsequent alcohol problems, unprotected sexual intercourse, multiple partners, being drunk or high during sexual intercourse, and pregnancy. Among females, early drinking was also related to sexual initiation and recent sexual intercourse.

**Conclusions.** Prevention programs should address combined risks of early alcohol use and sexual intercourse, especially where levels of HIV and other sexually transmitted infections are elevated. (*Am J Public Health.* 2005;95:887-893. doi:10.2105/AJPH.2003.026567)

may be especially relevant for younger adolescents, who are more likely to be using alcohol than other drugs.<sup>21,22</sup>

Disentangling the effects of early drinking on later risk taking is difficult, however, partly because early use often coincides with other problem behaviors. Although several studies of substance use have tracked large numbers of students from elementary through high school years,<sup>23-25</sup> information on the sustained influence of both early alcohol use and sexual initiation is limited, especially for subsets of the population such as economically disadvantaged urban youths.<sup>26-28</sup> It is also possible that drinking is associated with some behaviors, such as decisions to have sexual intercourse and having multiple partners, but not others, such as condom use. In the latter case, other factors, such as the type of relationship in which drinking and sexual intercourse occur, may come into play.<sup>29-34</sup> Additionally, some research suggests that different risk and protective factors may influence sexual risk taking and substance use<sup>28,35</sup>; thus, early drinking may differentially affect later substance use and sexual choices.

We examined relations between early initiation of alcohol use and subsequent risk behaviors in a large sample of urban youths fol-

lowed from 7th through 10th grade. This sample represents a segment of young adolescents for whom sexual initiation often occurs at an age when, nationwide, youths of the same age may start experimenting with alcohol but have not yet begun to have sexual intercourse. We investigated whether youths who reported early drinking were more likely to report recent alcohol use, alcohol misuse, and sexual risk taking as 10th-grade students. We explored whether relations between early alcohol initiation and subsequent risk taking differed for males and females.

We focused on gender differences for several reasons. In response to a survey conducted by the Kaiser Family Foundation, girls and young women were more likely than boys and young men to report that peers are engaging in unprotected sexual intercourse while under the influence of alcohol.<sup>36</sup> For females, these encounters may be particularly dangerous because of greater biological susceptibility to gonorrhea and chlamydia and HIV infection. Additionally, female drinkers may develop problems at lower levels of drinking than males, and the progression from use to misuse occurs more rapidly.<sup>37</sup> We also considered whether early alcohol use remained a risk factor after we controlled for

sociodemographic characteristics, early sexual initiation, and early use of cigarettes.<sup>38</sup> Controlling for these potential confounders provides a more stringent test of the effects of early alcohol initiation.

## METHODS

All seventh-grade students attending 3 large middle schools in Brooklyn, NY, during the 1994–1995 and 1995–1996 school years were eligible for participation in the Reach for Health study. The schools had more than 80% of students eligible for free lunch programs, below-grade-level and below-city averages on standardized test scores, and comparatively low high school graduation rates. The recruitment sites, field procedures for obtaining written permission, survey administrations, and initial survey completion rates have been described elsewhere.<sup>39,40</sup>

### Sample

The Reach for Health sample used in these analyses includes 1034 youths who attended the middle schools in both 7th and 8th grades and who completed surveys during the autumn of 7th grade (baseline) and spring of 10th grade (follow-up). Although these middle school participants dispersed to more than 120 high schools, three quarters were surveyed during 10th grade. Follow-up procedures, attrition, and potential biases have been described elsewhere.<sup>10</sup>

Table 1 presents sociodemographic characteristics of the sample at baseline. To assess potential attrition biases, we compared all youths who completed a baseline survey with those who completed a high school survey on baseline sociodemographic characteristics and reports of sexual and alcohol risk behaviors. The proportion of females at baseline was somewhat lower for the full sample (50.3%) than for those completing a high school survey (55.3%); this was the largest difference observed. Because the Reach for Health study included some students in intervention components, the impact of intervention assignment on attrition was examined; no significant differences were found.

### Survey Administration and Measures

At both baseline and follow-up, youths completed a pencil and paper questionnaire

**TABLE 1—Baseline Characteristics of Participants in the Longitudinal Reach for Health Sample Who Completed Middle and High School Surveys (n = 1034): Brooklyn, NY, 1994–1995**

	Percentage
Gender	
Female	55.3
Male	44.7
Race/ethnicity	
Hispanic	18.7
Black	78.8
Other	2.5
Age, y	
11–12	71.9
13–14	28.2
Household living arrangements	
Always live with mother and father	34.5
Mother only	51.8
Other	13.8
Self-reported physical maturity	
Look older	30.6
Look the same	46.1
Look younger	23.3

containing approximately 250 items. Youths completed the baseline survey during the school day. The 10th-grade surveys took place in many settings, including high schools the students attended, their former middle schools, and community locations where privacy could be ensured.

Baseline and follow-up questions about alcohol use were introduced by the statement “By alcohol, we mean beer, wine, wine coolers, malt liquor, and hard liquor. Don’t count the times when you just took a few sips of alcohol when you answer these questions.” Items included the following: “Have you ever drunk alcohol?” “In the past month (30 days) how often did you drink alcohol?” “In the past year, have you gotten drunk on alcohol or high on drugs?” At 10th grade, 2 questions were added: “In the past month, how often did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?” “In the past year, how often did drinking alcohol or using drugs interfere with school, work, or other responsibilities (e.g., being late or missing school or work, hurting your concentra-

tion)?” Responses to questions about the frequency of a behavior were recoded into dichotomous categories (no/never vs yes).

Baseline and follow-up questions about sexual behavior included the following: “Have you ever had sexual intercourse? This is sometimes called ‘going all the way.’” In the past 3 months, did you have sexual intercourse?” At 10th grade, additional items included the following: “In the past 3 months, have you been drunk or high while having sexual intercourse?” “How many people have you had sexual intercourse with during your life?” “Have you ever been pregnant or gotten someone pregnant?” “In the past 3 months, how much of the time was a condom (rubber) used when you had sexual intercourse?” Most items with multiple responses were recoded into dichotomous categories (no/never vs yes). Number of partners was dichotomized as 3 or more versus fewer or none. Unprotected sex was dichotomized as always used a condom or abstinent versus other responses.

Analyses took into account baseline sociodemographic factors shown in prior work to be related to sexual behavior.<sup>10</sup> These include gender; age (11 to 12 years vs 13 to 14 years); ethnic/racial identification; self-perceived physical maturity (“I look older/younger/same as most of my friends”); and household living arrangements (“Which best describes whom you live with?”). Race/ethnicity was measured by asking separate yes/no items: “Are you Black/African American; Hispanic/Latino; Native American; white; other”; responses were recoded as Hispanic or not. Cigarette use was assessed at baseline by asking, “Have you ever smoked a cigarette, even 1 or 2 puffs?”

### Data Analyses

We tabulated descriptive information on alcohol and sexual intercourse—related measures for the sample and by gender. We used logistic regression to examine relations between early alcohol initiation and alcohol and sexual behaviors at 10th grade. The first set of regressions are based on the full sample and control for seventh-grade sexual initiation, gender, age, ethnicity, living arrangement, and perceived maturity. Preliminary analyses indicated that intervention assignment did not

**TABLE 2—Percentages of Youths Reporting Alcohol and Sexual Behaviors at 7th-Grade (Fall) Baseline and 10th-Grade (Spring) Follow-Up, by Gender (n = 1034)**

Risk Behavior	Baseline			Follow-Up		
	Total	Male	Female	Total	Male	Female
Ever used alcohol	25.6	26.0	25.3	62.8	63.2	62.5
Recent alcohol use (past month)	9.2	9.3	9.1	28.8	30.1	27.7
Drunk or high (past year)	3.1	2.1	3.9	24.0	25.1	23.2
Ever had sexual intercourse	18.9 <sup>a</sup>	31.2	8.9	58.8 <sup>a</sup>	67.1	52.2
Recent sexual intercourse (past 3 mo)	13.2 <sup>a</sup>	22.7	5.4	47.7 <sup>a</sup>	54.4	42.4
Binge drinking (past month)	...	...	...	13.9	16.0	11.9
Alcohol or drugs interfere with life (past year)	...	...	...	16.6	18.7	14.9
More than 2 lifetime sexual partners	...	...	...	30.0 <sup>a</sup>	46.0	17.2
Lifetime pregnancy	...	...	...	10.3 <sup>a</sup>	7.0	13.0
Drunk/high during recent sexual intercourse <sup>b</sup>	...	...	...	19.1	21.1	17.0
Unprotected recent sexual intercourse <sup>b</sup>	...	...	...	36.6 <sup>a</sup>	29.8	43.6

<sup>a</sup>Gender differences significant at  $P < .05$ ,  $\chi^2$  test.

<sup>b</sup>Among those reporting sexual initiation (n = 591).

alter the pattern of results and thus was deleted from subsequent analyses. To assess whether the relation between early alcohol initiation and each 10th-grade outcome varied by gender, we introduced a gender-by-early-alcohol initiation cross-product term. In each case where the interaction term was statistically significant, we repeated the analysis among males and females separately.

Three additional analyses were conducted. First, we assessed whether alcohol is simply a proxy for generalized substance use by controlling for early cigarette use, the other commonly reported gateway drug. Second, we examined whether the effects of early drinking were mediated by current alcohol use by adding 10th-grade recent use of alcohol to the regression equations for other 10th-grade measures of recent behaviors. Finally, we repeated the analyses within a subsample of high-risk adolescents, that is, those reporting initiation of both alcohol use and sexual intercourse by 10th grade. These analyses address the question “Does delaying use of alcohol by even a couple of years reduce the likelihood of subsequent alcohol and sexual risk taking?”

## RESULTS

Table 2 presents percentages of adolescents who reported alcohol and sexual behaviors at each survey wave. Approximately

one quarter of both males and females reported alcohol initiation by the autumn of seventh grade, and about 9% reported having used alcohol within the past month. Less than 5% of each gender reported being drunk or high during the past year. By contrast, there were significant gender differences in reports of early sexual behaviors: 8.9% of females compared with 31.2% of males reported sexual initiation by the autumn of seventh grade; 5.4% of females and 22.7% of males reported sexual intercourse in the past 3 months.

At 10th grade, males' and females' reports of alcohol initiation and use remained similar to each other, and the gender gap in sexual initiation and recent sexual intercourse had narrowed. At this time, 62.8% had used alcohol, 28.8% had recently had a drink, 24.0% had been drunk or high in the past year, 13.9% reported binge drinking, and 16.6% reported that alcohol or drugs had interfered with their lives. More than half the females reported sexual initiation by the spring of 10th grade, and 42.4% had sexual intercourse during the past 3 months. Two thirds of the males reported sexual initiation by the same time, and 54.4% reported recent sexual intercourse. Males were more likely to have had 3 or more sexual partners (46.0% vs 17.2%). Thirteen percent of females reported having been pregnant; 7% of males reported

getting a partner pregnant. Among those reporting sexual initiation by follow-up, 43.6% of females and 29.8% of males had unprotected sex in the past 3 months; the remainder had always used condoms during recent sexual intercourse or were abstinent. Among the sexually initiated, about 19% of both males and females reported recent sexual intercourse while drunk or high.

Table 3 presents results of logistic regressions examining the relations between early alcohol initiation and 10th-grade alcohol and sexual outcomes. As noted earlier, we examined the interaction among gender, early alcohol initiation, and each outcome. The table presents coefficients from the interaction model when the interaction term is significant; otherwise, it presents coefficients from the main effects model.

Early alcohol initiation was significantly associated with all 4 tenth-grade alcohol outcomes when we controlled for background characteristics (Table 3). Males and females who reported alcohol use by the autumn of 7th grade were significantly more likely as 10th-grade students to report recent alcohol use, recent binge drinking, being drunk or high in the past year, and having a recent alcohol or drug problem. The gender-by-alcohol-initiation interaction term was significant for 1 outcome; the relation between early use and 10th grade reports of being drunk or high was stronger for females. Females who initiated alcohol early were 4 times more likely to report this outcome than females who did not report early drinking (adjusted odds ratio [AOR]=4.17; 95% confidence interval [CI]=2.66, 6.54); early-alcohol-initiating males were twice as likely as other males to be drunk or high during the past year (AOR=2.19; 95% CI=1.32, 3.63).

Early alcohol initiation was positively associated with number of partners and pregnancy for both males and females; for sexual initiation and recent intercourse, there were significant gender-by-alcohol-initiation interactions (Table 3). Within-gender analyses indicated that early alcohol initiation was not significantly associated with either outcome among males. However, females who used alcohol by 7th grade were more likely than noninitiators to report recent sexual intercourse as 10th-grade students

**TABLE 3—Logistic Regressions of Follow-Up Alcohol and Sexual Risk Behaviors on Baseline Alcohol Initiation and Baseline Covariates (Adjusted Odds Ratios and 95% Confidence Intervals)**

Behaviors	Recent Alcohol Use (Past Month)	Binge Drinking (Past Month)	Drunk/High (Past Year)	Alcohol/Drugs Interfere With Life (Past Year)	Sexual Initiation <sup>a</sup>	Recent Sexual Intercourse (Past 3 Months)	More Than 2 Lifetime Sexual Partners	Lifetime Pregnancy
Seventh grade alcohol initiation	2.40 <sup>b</sup> (1.75, 3.29)	1.87 <sup>b</sup> (1.25, 2.80)	2.01 <sup>b</sup> (1.23, 3.27)	2.41 <sup>b</sup> (1.66, 3.49)	0.84 (0.45, 1.56)	1.07 (0.67, 1.69)	1.54 <sup>b</sup> (1.10, 2.26)	1.73 <sup>b</sup> (1.10, 2.70)
Gender								
Female	0.98 (0.72, 1.34)	0.72 (0.49, 1.08)	0.79 (0.52, 1.18)	0.75 (0.51, 1.08)	0.57 <sup>b</sup> (0.41, 0.79)	0.60 <sup>b</sup> (0.44, 0.82)	0.25 <sup>b</sup> (0.18, 0.35)	2.33 <sup>b</sup> (1.42, 3.81)
Male (reference)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Gender by alcohol initiation interaction	... <sup>c</sup>	... <sup>c</sup>	1.98 <sup>b</sup> (1.04, 3.78)	... <sup>c</sup>	2.18 <sup>b</sup> (1.00, 4.50)	2.05 <sup>b</sup> (1.12, 3.75)	... <sup>c</sup>	... <sup>c</sup>
7th grade sexual initiation	1.36 (0.94, 1.98)	1.12 (0.70, 1.79)	2.09 <sup>b</sup> (1.42, 3.07)	1.35 (0.88, 2.08)	...	2.44 <sup>b</sup> (1.69, 3.54)	2.31 <sup>b</sup> (1.60, 3.34)	1.81 <sup>b</sup> (1.06, 3.07)
Ethnicity								
Hispanic	1.67 <sup>b</sup> (1.18, 2.36)	1.44 (0.92, 2.23)	1.14 (0.77, 1.69)	1.37 (0.90, 2.09)	0.92 (0.64, 1.32)	1.05 (0.75, 1.46)	0.77 (0.52, 1.14)	0.75 (0.42, 1.36)
Not Hispanic (reference)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Age, y								
13–14	1.20 (0.88, 1.64)	1.60 <sup>b</sup> (1.08, 2.36)	0.96 (0.68, 1.36)	1.14 (0.79, 1.66)	1.37 (0.99, 1.90)	1.23 (0.92, 1.65)	1.42 <sup>b</sup> (1.03, 1.96)	2.34 <sup>b</sup> (1.52, 3.60)
11–12 (reference)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Household								
Mother only	0.82 (0.60, 1.13)	1.03 (0.68, 1.55)	1.30 (0.92, 1.84)	1.27 (0.85, 1.89)	1.73 <sup>b</sup> (1.26, 2.36)	1.51 <sup>b</sup> (1.13, 2.01)	1.70 <sup>b</sup> (1.22, 2.38)	1.54 (0.93, 2.43)
Other	0.98 (0.63, 1.53)	0.72 (0.38, 1.36)	1.30 (0.79, 2.12)	1.38 (0.80, 2.37)	1.47 (0.94, 2.92)	1.30 (0.86, 1.97)	1.10 (0.68, 1.78)	1.43 (0.73, 2.81)
2 parents (reference)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maturity								
Younger	0.89 (0.62, 1.28)	1.06 (0.66, 1.72)	1.03 (0.69, 1.54)	1.12 (0.71, 1.78)	1.02 (0.71, 1.45)	1.02 (0.74, 1.42)	1.09 (0.74, 1.58)	1.22 (0.68, 2.19)
Older	1.02 (0.73, 1.42)	1.28 (0.83, 1.97)	1.41 (0.98, 2.02)	1.70 <sup>b</sup> (1.14, 2.54)	1.62 <sup>b</sup> (1.16, 2.26)	1.23 (0.91, 1.68)	1.48 <sup>b</sup> (1.04, 2.11)	1.79 <sup>b</sup> (1.10, 2.91)
Same (reference)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

<sup>a</sup>Among respondents who were not sexually initiated at baseline.<sup>b</sup>Differences significant at  $P \leq .05$ .<sup>c</sup>Interaction term not statistically significant; the main effects model is presented.

(AOR=1.75; 95% CI=1.13, 2.71), and among females who were virgins at baseline, early drinkers were more likely than others to have initiated sexual intercourse by 10th grade (AOR=2.24; 95% CI=1.49, 3.36). Controlling for early smoking did not appreciably alter the results for these outcomes (pregnancy is the exception), although significance levels decreased to the trend level ( $P < .1$ ) for binge drinking and multiple partners (results not shown).

Does current alcohol use mediate the effect of early alcohol initiation? That is, are early alcohol initiators more likely to report later risk behaviors simply because they are more likely than their peers to be drinking in 10th grade? Recent alcohol use mediates the relation between early alcohol use and subsequent binge drinking but does not fully explain the link with 3 other outcomes.

When we controlled for recent drinking, both males and females who used alcohol early were more likely to report being drunk or high in the past year, with a greater risk for females (males: AOR=1.84; 95% CI=1.03, 3.30; females: AOR=3.27; 95% CI=1.96, 5.47). Both genders were more likely to report having alcohol- or drug-related problems (AOR=1.79; 95% CI=1.19, 2.69), and females who were early alcohol initiators were more likely to report recent sexual intercourse at follow-up (AOR=1.84; 95% CI=1.20, 2.80).

Table 3 also shows the relations between sociodemographic characteristics and the 10th-grade outcomes. Ethnicity was associated with only 1 outcome; Hispanic youths were more likely to report recent alcohol use in 10th grade. Compared with youths living with both parents at baseline, those living

only with their mother were at higher risk of sexual initiation, recent sexual intercourse, and having multiple partners. Youths who were older at baseline were more likely to report binge drinking, multiple sexual partners, and pregnancy. Those who reported looking older than their peers at baseline were at elevated risk for alcohol and drug problems, sexual initiation, multiple partners, and pregnancy. Early sexual initiation was also significantly associated with 4 tenth-grade outcomes: being drunk or high during the past year, recent sexual intercourse, multiple partners, and pregnancy.

Table 4 displays relations between early alcohol initiation and 7 measures of subsequent risk taking among youths who had initiated both alcohol use and sexual intercourse by the end of 10th grade ( $n=450$ ). Even when we controlled for early sexual initiation and

**TABLE 4—Logistic Regression of Recent Alcohol and Sexual Risk Behaviors on Baseline Alcohol and Sexual Initiation Among Students Who Had Initiated Alcohol Use and Sexual Intercourse at Follow-Up (Adjusted Odds Ratios and 95% Confidence Intervals)**

Alcohol and Sexual Risk Behaviors at Follow-Up	Baseline Alcohol Initiation <sup>a</sup>	Baseline Sexual Initiation <sup>a</sup>
Recent alcohol use (past month)	1.27 (0.84,1.92)	1.31 (0.82, 2.10)
Binge drinking (past month)	1.05 (0.64,1.72)	1.06 (0.61,1.83)
Drunk/high (past year)	1.98 <sup>b</sup> (1.30, 3.02)	1.72 <sup>b</sup> (1.06, 2.79)
Alcohol/drugs interfere with life (past year)	1.92 <sup>b</sup> (1.22, 3.02)	0.92 (0.55, 1.54)
Recent sexual intercourse (past 3 months)	1.22 (0.72, 2.08)	1.64 (0.88, 3.03)
Drunk/high during sexual intercourse (past 3 months)	1.90 <sup>b</sup> (1.16, 3.12)	1.10 (0.63, 1.91)
Unprotected sexual intercourse (past 3 months)	1.95 <sup>b</sup> (1.24, 3.06)	1.21 (0.71, 2.04)

<sup>a</sup>Odds ratios are adjusted for baseline gender, age, ethnicity, household structure, and perceived maturity.

<sup>b</sup>Differences significant at  $P \leq .05$ .

sociodemographic characteristics, early alcohol initiation was significantly associated with 4 of the more consequential behaviors—being drunk or high, having alcohol or drug-related problems, being drunk or high during sexual intercourse, and unprotected intercourse. These associations were similar for males and females and are not explained by recent alcohol use (results not shown). Early sexual initiation was associated with only 1 outcome, being drunk or high during the past year. Thus, even among youths who were already sexually experienced and using alcohol by 10th grade, early alcohol initiation appears to be a significant predictor of more serious forms of alcohol and sexual risk taking and may exert an even more long-term effect than early sexual initiation.

## DISCUSSION

This study identifies early alcohol use as an important risk factor for subsequent sexual risk taking among urban youths whose health and well-being are jeopardized by potential exposure to HIV and other sexually transmitted infections, as well as other potentially negative consequences, including unplanned pregnancies. The implications are clear. Prevention programs need to begin even earlier than seventh grade and must address the combined risks of early drinking and sexual experimentation.

When we controlled for early sexual initiation and sociodemographic characteristics, early alcohol initiation was associated with

multiple risks, including subsequent alcohol use and misuse and a range of sexual decisions and risk taking. Indeed, the consistency of the findings is striking: early drinking appeared to influence behavioral risk taking for at least 3.5 critical years of adolescence, from the time students entered middle school through the first 2 years of high school. Early drinkers were more likely to report subsequent alcohol problems, multiple sexual partners, unprotected sexual intercourse, being drunk or high during sexual intercourse, and pregnancy. Moreover, by 10th grade, females who reported early alcohol use were about 4 times as likely as their alcohol-delaying counterparts to report being recently drunk or high and almost twice as likely to have initiated sexual intercourse or engaged in recent sexual intercourse. Among males, early drinking was not associated with sexual initiation or recent sexual intercourse, perhaps because at both 7th and 10th grades, more males than females reported having sexual experience. Insofar as sexual initiation and relationships are normative behaviors, they may be less tied to other problem behaviors such as alcohol use.

By the autumn of seventh grade, about one third of males and females in our sample had initiated alcohol use; these figures are similar to nationwide trends.<sup>41</sup> What most differentiates our sample is that almost equal proportions of males and females report sexual initiation. Although a smaller proportion of seventh-grade females said they were sexually experienced, our previous work showed that

they, too, were at the threshold of sexual risk taking, also earlier than most youths nationwide.<sup>10</sup> Because early drinking is an even more pronounced risk factor for subsequent sexual initiation and risks among females, it is imperative that prevention be targeted to the moment of opportunity before the initiation of both behaviors begins.

It is also noteworthy that early alcohol initiation was related to subsequent risk behaviors among the subset of youths who were already sexually active and using alcohol by 10th grade. This suggests that delaying alcohol use by even a few years may be protective, again highlighting the importance of early prevention and intervention. In addition, early drinking may be a warning sign or marker of trouble, identifying youths who are at high risk for a variety of problem behaviors and in need of more intensive and targeted intervention.

Our results also highlight the need to address potential gender differences in risk trajectories. For example, by providing alcohol and sexual intercourse prevention programs to girls in sixth and seventh grades, it may be possible to discourage the initiation of both behaviors. For boys, however, the link between drinking and sexual intercourse may be established earlier, requiring earlier intervention. It is also possible that different risk and protective factors influence early drinking and sexual behaviors among males and females. Although some factors (e.g., psychological functioning, vulnerability to social influences, social competence) have been linked to alcohol involvement for both genders and across ethnicities, differences in predictive factors have also been noted.<sup>14,42,43</sup> Gender differences in types of relationships and age of partners may also shape risk perceptions and behaviors.<sup>44</sup>

Within our relatively homogeneous sample of disadvantaged youth, race/ethnicity was not consistently related to either alcohol or sexual outcomes. Youths who reported living only with their mothers and those who felt they looked older or were older than their peers were more likely to report some sexual risk behaviors. Although it is important to control for such characteristics in analyses, they are not easily changed. Future efforts need to identify factors that not only influ-

ence drinking and sexual risk taking but also can be addressed through intervention.<sup>45</sup>

Although this study provides insights into the potential consequences of early alcohol initiation, there are some caveats. On the indexes of interest, there does not appear to be systematic bias introduced by attrition; however, about 25% of youths were lost to follow-up because they moved from the metropolitan area or dropped out of the study. Additionally, other factors, such as other substance use or personality characteristics, may cause both early drinking and subsequent risk taking. Although personality characteristics were not measured, controlling for early sexual initiation, cigarette use, and sociodemographic characteristics helps guard against confounding as the full explanation, as does the consistency of findings across multiple outcomes. Research is needed that examines other potential confounders and processes through which early alcohol initiation affects later risk taking. Further, results are limited to youths whose experiences and risks are similar to those of Reach for Health participants. This, of course, is also a strength; adolescents who are at substantial risk have often been underrepresented in other research. Finally, gender-biased reporting may partially explain gender differences in sexual behaviors. In past analyses, we included a measure of social desirability, but it was not significantly related to behavioral reports.

In sum, this account provides important information about the potential long-term consequences of early drinking on the lives of urban youths followed through the first 2 years of high school. Using this information to inform prevention efforts that address the destructive and potentially life-threatening consequences of early alcohol use is the next, critical step. ■

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This article was accepted March 21, 2004.

### Contributors

Both authors developed the research questions, designed and conducted the analyses, and wrote the article.

### Acknowledgments

This research was funded by grants from the National Institute of Child Health and Human Development (5U01HD30101 and HD35378).

We thank Richard Duran, Alexi San Doval, and Renée Wilson-Simmons for their participation in and supervision of data collection activities.

### Human Participant Protection

Institutional review boards at Education Development Center, Inc, and the New York City public schools reviewed and approved this project.

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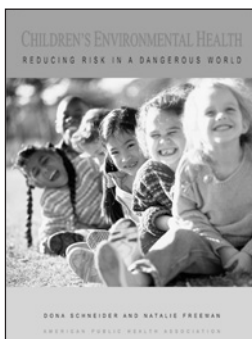
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